

Claims:

Following is a complete listing of the claims pending in the application.

1. (Original) A method of wire-bonding, comprising:
positioning a first electrode and a second electrode at least proximate to a wire
attached to a terminal of a microelectronic component; and
severing the wire with an electrical discharge between the first and second
electrodes.
2. (Original) The method of claim 1 wherein severing the wire with the
electrical discharge comprises forming a first segment of wire having a first end
attached to the terminal and a second, free end with a ball.
3. (Original) The method of claim 1, further comprising attaching the wire to
the terminal by moving a capillary of a bond head to a position at least proximate to the
terminal, and wherein positioning the first and second electrodes comprises moving the
first and second electrodes relative to the bond head.
4. (Original) The method of claim 1, further comprising attaching the wire to
the terminal by moving a capillary of a bond head to a position at least proximate to the
terminal, and wherein positioning the first and second electrodes comprises moving the
first and second electrodes and the bond head as a unit.
5. (Original) The method of claim 1 wherein:
the first electrode comprises a first tip and the second electrode comprises a
second tip; and
positioning the first and second electrodes comprises positioning the first and
second tips on opposite sides of the wire.

6. (Original) The method of claim 1 wherein:
the first electrode comprises a first end portion and the second electrode comprises a second end portion; and
positioning the first and second electrodes comprises positioning the first and second end portions at an angle generally normal to the wire.
7. (Original) The method of claim 1, further comprising grounding the wire before severing the wire.
8. (Original) The method of claim 1 wherein:
the first electrode comprises an anode and the second electrode comprises a cathode; and
positioning the first and second electrodes comprises positioning the anode and the cathode at least proximate to the wire.
9. (Original) The method of claim 1 wherein:
the first and second electrodes form at least part of a wire severing tool; and
positioning the first and second electrodes comprises positioning the wire in an opening of the wire severing tool between the first and second electrodes.
10. (Original) A method of wire-bonding, comprising:
attaching a wire to a terminal of a microelectronic component; and
generating an arc between a first electrode and a second electrode to sever the wire at a point at least proximate to the first and second electrodes, wherein the first and second electrodes are moveable with respect to the wire.
11. (Original) The method of claim 10 wherein generating the arc between the first and second electrodes comprises forming a first segment of wire having a first end attached to the terminal and a second, free end with a ball.

12. (Original) The method of claim 10, further comprising moving the first and second electrodes relative to a bond head to position the first and second electrodes at least proximate to the wire before generating the arc.

13. (Original) The method of claim 10, further comprising moving the first and second electrodes and a bond head as a unit to position the first and second electrodes at least proximate to the wire before generating the arc.

14. (Original) The method of claim 10 wherein:
the first electrode comprises a first tip and the second electrode comprises a second tip; and
the method further comprises positioning the first and second tips on opposite sides of the wire before generating the arc.

15. (Original) The method of claim 10 wherein:
the first electrode comprises a first end portion and the second electrode comprises a second end portion; and
the method further comprises positioning the first and second end portions at an angle generally normal to the wire before generating the arc.

16. (Original) The method of claim 10 wherein:
the first electrode comprises an anode and the second electrode comprises a cathode; and
generating the arc comprises generating the arc between the anode and the cathode.

17. (Original) The method of claim 10 wherein:
the first and second electrodes form at least part of a wire severing tool; and

the method further comprises positioning the wire in an opening of the wire severing tool between the first and second electrodes before generating the arc.

18. (Original) A method of wire-bonding, comprising:
providing a wire severing tool having a first electrode and a second electrode spaced apart from at least a portion of the first electrode to define an opening;
positioning a wire in the opening between the first and second electrodes; and
generating an electrical discharge between the first and second electrodes to sever the wire.
19. (Original) The method of claim 18, further comprising bonding the wire to a terminal of a microelectronic component with a wire bonder.
20. (Original) The method of claim 18 wherein positioning the wire comprises moving the wire severing tool relative to a bond head.
21. (Original) The method of claim 18 wherein positioning the wire comprises moving the wire severing tool and a bond head as a unit.
22. (Original) The method of claim 18 wherein:
the first electrode of the wire severing tool comprises a first tip and the second electrode comprises a second tip; and
positioning the wire comprises moving the wire severing tool to position the first and second tips on opposite sides of the wire.
23. (Original) The method of claim 18 wherein:
the first electrode of the wire severing tool comprises a first end portion and the second electrode comprises a second end portion; and

positioning the wire comprises moving the wire severing tool to position the first and second end portions at an angle generally normal to the wire.

24. (Original) A wire bonder for bonding a wire to a terminal of a microelectronic component, the wire bonder comprising:

a bond head having a capillary;

a first electrode and a second electrode each coupled to the bond head; and

a controller operably coupled to the first and second electrodes to selectively generate an electrical discharge between the first and second electrodes to sever the wire.

25. (Original) The wire bonder of claim 24 wherein the first and second electrodes are attached to a dielectric member.

26. (Original) The wire bonder of claim 24 wherein the first and second electrodes are attached to a dielectric member, and wherein the first electrode has a first arcuate portion with a first tip and the second electrode has a second arcuate portion with a second tip spaced apart from the first tip by a gap sized to receive the wire.

27. (Original) The wire bonder of claim 24 wherein the first and second electrodes and the bond head are movable as a unit.

28. (Original) The wire bonder of claim 24, further comprising a positioning mechanism coupled to the first and second electrodes to move the first and second electrodes relative to the bond head.

29. (Original) The wire bonder of claim 24 wherein the first electrode comprises an anode and the second electrode comprises a cathode.

30. (Original) A wire bonder for bonding a wire to a terminal of an electronic component, the wire bonder comprising:

a bond head having a capillary;

a first electrode and a second electrode disposed relative to the bond head; and

a controller operably coupled to the first and second electrodes, the controller having a computer-readable medium containing instructions to perform a method comprising –

positioning the first electrode and a second electrode at least proximate to the wire attached to the terminal of the electronic component; and

severing the wire with an electrical discharge between the first and second electrodes.

31. (Original) The wire bonder of claim 30 wherein the first and second electrodes are attached to a dielectric member.

32. (Original) The wire bonder of claim 30 wherein the first and second electrodes are attached to a dielectric member, and wherein the first electrode has a first arcuate portion with a first tip and the second electrode has a second arcuate portion with a second tip spaced apart from the first tip by a gap sized to receive the wire.

33. (Original) The wire bonder of claim 30 wherein the first and second electrodes and the bond head are movable as a unit.

34. (Original) The wire bonder of claim 30, further comprising a positioning mechanism coupled to the first and second electrodes to move the first and second electrodes relative to the bond head.

35. (Original) The wire bonder of claim 30 wherein the first electrode comprises an anode and the second electrode comprises a cathode.

36. (Original) A wire bonder for bonding a wire to a terminal of a microelectronic component, the wire bonder comprising:

a bond head having a capillary;

a first electrode and a second electrode disposed relative to the bond head; and

a controller operably coupled to the first and second electrodes, the controller having a computer-readable medium containing instructions to perform a method comprising –

attaching the wire to the terminal of the microelectronic component; and

generating an arc between the first and second electrodes to sever the wire at a point at least proximate to the first and second electrodes.

37. (Original) The wire bonder of claim 36 wherein the first and second electrodes are attached to a dielectric member.

38. (Original) The wire bonder of claim 36 wherein the first and second electrodes are attached to a dielectric member, and wherein the first electrode has a first arcuate portion with a first tip and the second electrode has a second arcuate portion with a second tip spaced apart from the first tip by a gap sized to receive the wire.

39. (Original) The wire bonder of claim 36 wherein the first and second electrodes and the bond head are movable as a unit.

40. (Original) The wire bonder of claim 36, further comprising a positioning mechanism coupled to the first and second electrodes to move the first and second electrodes relative to the bond head.

41. (Original) A wire bonder for bonding a wire to a terminal of a microelectronic component, the wire bonder comprising:

a bond head having a capillary; and

a wire severing tool disposed relative to the bond head, the wire severing tool having a first electrode, a second electrode, and a dielectric member separating the first and second electrodes, the first electrode including a first end portion and the second electrode including a second end portion spaced apart from the first end portion to define an opening for receiving the wire.

42. (Original) The wire bonder of claim 41 wherein the wire severing tool and the bond head are movable as a unit.

43. (Original) The wire bonder of claim 41, further comprising a positioning mechanism coupled to the wire severing tool to move the wire severing tool relative to the bond head.

44. (Original) The wire bonder of claim 41 wherein the first end portion includes a first tip and the second end portion includes a second tip spaced apart from the first tip by a gap sized to receive the wire.

45. (Original) The wire bonder of claim 41 wherein the first and second end portions have arcuate configurations.